

CLAIMS

What is claimed is:

1. A superabrasive tool precursor consisting essentially of:
at least one superabrasive particle coated with a solidified molten braze alloy.
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2. The tool precursor of claim 1, wherein the at least one coated superabrasive particle is a plurality of coated particles metallurgically bonded together by the braze alloy coatings.
- 10 3. The tool precursor of claim 2, wherein the bonded plurality of coated particles forms a one dimensional structure.
4. The tool precursor of claim 2, wherein the bonded plurality of coated particles forms a two dimensional structure.
- 15 5. The tool precursor of claim 2, wherein the bonded plurality of coated particles forms a three dimensional structure.
6. The tool precursor of claim 2, wherein the bonded plurality of coated particles
20 are each arranged and held in accordance with a predetermined pattern.
7. A superabrasive tool comprising:
a support matrix; and
a tool precursor as recited in any one of claims 1-6 metallurgically bonded to
25 the support matrix.
8. The superabrasive tool of claim 7, wherein the support matrix comprises a consolidated metal powder.
- 30 9. The superabrasive tool of claim 8, wherein the support matrix is porous.
10. The superabrasive tool of claim 7, wherein the support matrix comprises a solid metal substrate.
- 35 11. The superabrasive tool of claim 7, further comprising a plurality of tool

precursors metallurgically bonded to the support matrix.

12. The superabrasive tool of claim 11, wherein the plurality of tool precursors are arranged such that the superabrasive particles substantially conform to a
5 predetermined pattern.

13. The superabrasive tool of claim 7, wherein the support matrix and tool precursor form a layer.

10 14. The superabrasive tool of claim 13, further comprising a plurality of layers metallurgically bonded together.

15 15. The superabrasive tool of claim 14, wherein the substrate of each layer comprises a solid metal, and each tool precursor is porous.

16. The superabrasive tool of claim 15, wherein the superabrasive particles of each tool precursor are arranged in accordance with a predetermined pattern.

20 17. The superabrasive tool of claim 16, wherein the pores in each tool precursor occur in accordance with a predetermined pattern.

18. The superabrasive tool of claim 15, wherein the tool is a saw segment.

25 19. The superabrasive tool of claim 16, wherein the saw is a reciprocating saw.

20. The superabrasive tool of claim 16, wherein the saw is a circular saw.

21. A superabrasive tool comprising:
a plurality of superabrasive particles coated with a solidified molten braze
30 alloy and metallurgically bonded together by the braze coatings; and
a plurality of spacer particles chemically bonded to the molten braze alloy.

22. The tool of claim 21, wherein the braze alloy is porous.

35 23. The tool of claim 21, wherein the superabrasive particles are arranged in

accordance with a predetermined pattern.

24. The tool of claim 21, wherein the spacer particles are arranged in accordance with a predetermined pattern.

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25. The tool of claim 22, wherein the pores occur in accordance with a predetermined pattern.

26. The tool of claim 21, wherein the spacer particles include particles of SiC.

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27. A method of making a tool precursor consisting essentially of:
metallurgically bonding together a plurality of superabrasive particles, each coated with a solidified molten braze alloy.

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28. The method of claim 27, wherein each particle is coated with a solidified molten braze alloy prior to metallurgically bonding the particles together.

29. The method of claim 27, wherein each particle is coated with a solidified molten braze alloy simultaneously with metallurgically bonding the particles together.

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30. The method of claim 27, wherein the particles are arranged in accordance with a predetermined pattern.

31. A method of making a superabrasive tool comprising:

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providing a tool precursor as recited in any one of claims 27-31; and
metallurgically bonding the precursor to a support matrix.

32. The method of claim 31, further comprising providing a plurality of tool precursors prior to metallurgically bonding to a support matrix.

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33. The method of claim 32, further comprising arranging the tool precursors such that the superabrasive particles are disposed substantially in accordance with a predetermined pattern, prior to metallurgically bonding the precursors to the support matrix.

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34. The method of claim 31, wherein the support matrix and tool precursor form a layer.

35. The method of claim 34, further comprising metallurgically bonding a
5 plurality of layers together.